

Application No. 09/698,817
Declaration dated October 8, 2004
Reply to Office Action of June 8, 2004
Application No.: 09/698,817



Applicant: Martin Theriault, et al.

Filed: October 26, 2000

Title: APPARATUS AND METHOD FOR MAINTAINING A DRY
ATMOSPHERE IN A SURFACE MOUNT DEVICE
PLACEMENT

TC/A.U.: 3729

Examiner: Thiem D. Phan

Docket Number: Serie 5118

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF FREDERICK GIACOBBE

1. I, F.W. Giacobbe, am a Senior Scientist in the Industrial Gases Research and Development facility of American Air Liquide, Inc. I received a B.S. Degree with a Major in Chemistry and Minor in Physics in 1965 from Central Connecticut State College, now known as Central Connecticut State University. I also received a M.S. in Chemistry in 1968 from Central Connecticut State College. I also received a Doctoral Degree with specialization in Physical Chemistry in 1971 from The Pennsylvania State University. The title of my Doctoral Dissertation was: Thermodynamic Study of Argon Adsorption at Liquid Nitrogen Temperatures on Porous Glass Pretreated With Water.

2. I worked as an Assistant Professor of Physics and Physics Department Chairman (1973 - 1975) at Shippensburg State College, now known as Shippensburg University from 1971-1975 in Shippensburg, PA.
3. I worked as a Manager of Gases Research/Research Scientist at the Chemetron Corporation's Gases Group Research Center from 1975-1978 in Hanover, PA.
4. I worked as an Industrial Gases Engineering and Design Consultant at Hanover Research and Development, Inc. from 1979-1982 in Hanover, PA.
5. I have also worked as a Senior Scientist at the Chicago Research Center for Industrial Gases Research and Development at American Air Liquide, Inc. from 1982 to the present date in Countryside, Illinois.
6. I have read the patent application identified above and the outstanding Office Action issued June 8, 2004 and the prior art cited by it, including U.S. Patent No. 6,054,682.
7. It is my opinion that one of ordinary skill in the art would understand that a "dry gas delivery system" is a delivery system that delivers a gas substantially devoid of water, either in condensed or vaporized forms. When a gas not explicitly described as dry is delivered to a chamber where it possibly is dried, that is not a dry gas delivery system because, by implication, that gas is assumed to be "wet" thus requiring the drying step prior to its use
8. One of ordinary skill in the art normally understands the following regarding baking in the context of drying Moisture/Reflow Sensitive Surface Mount Devices (MSDs). It is the process used to dry MSDs by volatilizing adsorbed and/or absorbed water vapor from these components that is performed either by the

original manufacturer of electronic components or by an end user of prefabricated electronic components before placing them onto printed circuit boards and soldering them in place. It is a heating process performed (usually in air) at some time before these components are actually attached (usually by some type of soldering process) to an electronic circuit board. The exact heating process parameters, such as the baking soak temperature and length of the baking time, are usually predetermined by the electronic component package thickness dimensions and a designated moisture sensitivity level that is assigned to a particular type of component based upon its susceptibility to contamination by adsorbed/absorbed moisture when it is exposed to typical indoor ambient atmosphere conditions. Specific moisture sensitivity levels are assigned according to the JEDEC Solid State Technology Association standards plus statistical reliability testing of MSDs by the manufacturer.

9. At the time the invention was made, the JEDEC Solid State Technology Association standards included J-STD-020 and/or JESD22-A113. At the time the invention was made, exact recommended baking conditions were related to MSD part thicknesses, as well as the specific moisture sensitivity levels, and were listed in Tables 2 and 3 of JEDEC Solid State Technology Association standard IPC/JEDEC J-STD-033. These tables provide the baking specifications that one of ordinary skill in the art would understand. However, these tables also cover two separate situations in which baking would have been (or may have been) required. Table 3 covers baking at the original MSD manufacturer's site

(or by a supplier or distributor) after particular MSDs are actually fabricated.

Table 2 covers baking at an end user's site prior to the attachment of specific MSDs to circuit boards. In both of these cases, the recommended baking procedures apply to MSDs that were exposed to ambient moisture conditions of less than or equal to 60% relative humidity.

10. I declare that all statements made herein of my own knowledge are true and that all statements made upon information and belief are believed to be true. I further declare that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Oct. 8, 2004

Date

F.W. Giacobbe

Signature of F.W. Giacobbe

CERTIFICATE OF MAILING UNDER 37 CFR 1.8(a)

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:

Commission for Patents
PO Box 1450
Alexandria, VA 22313-1450

On this 8th day of October 2004.

Christopher J. Cronin

Christopher J. Cronin

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